United States Department of the Interior

BUREAU OF LAND MANAGEMENT
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Integrated Weed Management along the Merced River (CA-180-14-11)
Finding of No Significant Impact
February 2014

It is my determination that this decision will not result in significant impacts to the quality of the human environment. Anticipated impacts are within the range of impacts addressed by the Sierra Resource Management Plan (RMP). Thus, the proposed action does not constitute a major federal action having a significant effect on the human environment; therefore, an environmental impact statement (EIS) is not necessary and will not be prepared. This conclusion is based on my consideration of CEQ's following criteria for significance (40 CFR §1508.27), regarding the context and intensity of the impacts described in the EA and based on my understanding of the project:

1) Impacts can be both beneficial and adverse and a significant effect may exist regardless of the perceived balance of effects. Potential impacts would include the mortality of targeted invasive plants, some mortality of nearby non-target vegetation through overspray, limited soil disturbance through hand-pulling and digging of weeds, and temporary traffic delays on the Merced River Road when herbicides are applied along the road.

2) The degree of the impact on public health or safety. To minimize risks to occupational and public receptors from exposure to herbicides, implementation of the Proposed Action would follow the Project Design Features and SOPs and Mitigation Measures in Appendices A and B of the EA.

3) Unique characteristics of the geographic area. The project is located within the Merced Wild and Scenic River corridor, the Merced River ACEC, and falls slightly within the Limestone Salamander ACEC. These areas have unique characteristics as discussed in EA CA-180-14-0X. The proposed action is consistent with the management of these areas and will help preserve the unique characteristics including wild and scenic values.

4) The degree to which the effects on the quality of the human environment are likely to be highly controversial effects. No anticipated effects have been identified that are scientifically controversial. As a factor for determining within the meaning of 40 C.F.R. § 1508.27(b)(4) whether or not to prepare a detailed environmental impact statement, "controversy" is not equated with "the existence of opposition to a use." *Northwest Environmental Defense Center v. Bonneville Power Administration*, 117 F.3d 1520, 1536 (9th Cir. 1997). "The term 'highly controversial' refers to instances in which 'a substantial dispute exists as to the size, nature, or effect of the major federal action rather than the mere existence of opposition to a use.'" *Hells Canyon Preservation Council v. Jacoby*, 9 F.Supp.2d 1216, 1242 (D. Or. 1998).

5) The degree to which the possible effects on the human environment are likely to be highly uncertain or involve unique or unknown risks. The analysis does not show that the proposed action would involve any unique or unknown risks.

6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The proposed action is not precedent setting.

7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. No significant site specific or cumulative impacts have been identified. The proposed action is consistent with the Sierra RMP.

8) The degree to which the action may adversely affect National Historic Register listed or eligible to be listed sites or may cause loss or destruction of significant scientific, cultural or historical resources. All activities that could negatively affect cultural properties will be avoided. The proposed action would not adversely affect cultural properties listed on or eligible for the National Register of Historic Places.

9) The degree to which the action may adversely affect ESA listed species or critical habitat. Valley elderberry longhorn beetle (VELB) *(Desmocerus californicus dimorphus)* is listed as threatened under the Federal Endangered Species Act. This species is an obligate specialist on blue elderberry (*Sambucus mexicana*) and it has only been found in association with its host plant. Therefore, a project design feature has been developed to prevent impacts to elderberry during weed treatment. A no-spray buffer of 100' will be observed around blue elderberry shrubs to avoid any impacts to the VELB. Applicators will be trained to recognize this species.

There are no other ESA listed species or critical habitat within the project area; therefore, consultation with US Fish and Wildlife Service is not necessary. However, limestone salamander is known to occur in the vicinity. Areas where weed treatments would occur are not considered suitable habitat and will not impact this species.

10) Whether the action threatens a violation of environmental protection law or requirements. There is no indication that the proposed action will result in actions that will threaten such a violation.

_____ _____

William S. Haigh
Field Manager,
Mother Lode Field Office

Date

United States Department of the Interior

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EA Number: CA-180-14-11

Proposed Action: Integrated weed management along the Merced River

Location: BLM-administered land within T 4 S, R 18 E Sec 2, 3, 5-10, 16, 17; T 4 S, R 17 E, Sec 1, 2, 10, 11; and T 3 S, R 18 E, Sec. 25, 35, 36 - Mariposa County.

1.0 Purpose and Need for the Action

1.1 Introduction

The proposed IWM plan is needed to reduce the adverse impacts associated with an increase in noxious and invasive weeds within the project area. The plan would be implemented in accordance with Federal and State laws, regulations, and policies, and the Sierra Resource Management Plan. This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental impacts of the invasive plant management as proposed by the Mother Lode Field Office. The EA is a field office site-specific analysis of potential effects that could result with the implementation of the Proposed Action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27.

An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If the decision maker determines that this project has "significant" impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A Decision Record, including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in "significant" environmental impacts (effects) beyond those already addressed in the Sierra Resource Management Plan (February 2008).

1.2 Background

Invasive plants are defined as "non-native plants whose introduction does or is likely to cause economic or environmental harm or harm to human health," based on the definition provided in Executive Order 131121[1]. Invasive plants are compromising the ability to manage BLM lands

[1] EXECUTIVE ORDER 1311 INVASIVE SPECIES (1999) - directs federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.

for a healthy native ecosystem. Invasive plants can create a host of environmental and other effects, most of which are harmful to native ecosystem processes, including: displacement of native plants; reduction in functionality of habitat and forage for wildlife and livestock; increased potential for soil erosion and reduced water quality; alteration of physical and biological properties of soil; loss of long-term riparian area function; loss of habitat for culturally significant plants; high economic cost of controlling invasive plants; and increased cost of keeping systems and recreational sites free of invasive species.

Integrated pest management[2] methods for invasive species control that will be analyzed in this EA include the following:

Chemical - Herbicides are chemicals that kill or injure plants. Herbicides can be categorized as selective or non-selective. Selective herbicides kill only a specific type of plant, such as broad-leaved plants, while non-selective herbicides kill all types of plants.

Physical - Manual treatment involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include cutting undesired plants above the ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and re-growth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit competitive growth.

1.3 Purpose and Need for the Action

The need for the action is to reduce and control large populations of invasive plants, including yellow starthistle (*Centaurea solstitialis*) and Italian thistle (*Carduus pycnocephalus*), and less extensive occurrences of tree-of-heaven (*Ailanthus altissima*) on approximately 150 acres of BLM lands along the Merced River corridor. The BLM has been treating yellow starthistle and Italian thistle in the area for more than a decade with physical control methods, but populations have been slow to diminish in size and the labor and expense of this approach has been extensive.

An EA/FONSI/DR approved in 2012 for weed control along the Merced River (CA-180-12-05) approved the use of clopyralid, triclopyr and the aquatic and non-aquatic formulations of glyphosate for yellow starthistle, Italian thistle and tree-of-heaven, in addition to manual and mechanical control methods. A Pesticide Use Proposal (PUP) was approved in conjunction with the EA (CA-180-12-05) to allow the herbicide application; however, the EA/FONSI/DR and PUP included large buffer areas for hand-application of herbicides near water (no closer than 25 feet from water's edge), and BLM herbicide protocols allow for the hand-application of herbicides up to 10 feet from water's edge (PEIS BLM 2007a). In addition, the aquatic formulation of glyphosate, Aquamaster, can be applied right up to the water's edge and the BLM

[2] INTEGRATED PEST MANAGEMENT - a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks (DOI Departmental Manual 517).

would like to be able to treat weeds that occur closer to the water's edge for more effective control in combination with physical control methods for this area.

The Merced River corridor has many unique values. To protect the wild and scenic qualities of this watershed, the Merced River was designated an ACEC in 1988 and a Wild and Scenic River in 1991. The south side of the river corridor was also designated an ACEC in 1986 to protect limestone salamander, a State-listed threatened species. An increase in invasive plants along the Merced River, due in part to traffic associated with white-water boating and other recreational uses along the river, has contributed to a downward trend in the health of native plant communities in this area. This has reduced the quality and quantity of habitat and forage for wildlife, altered soil productivity, increased the potential for soil erosion and adverse impacts on water quality, and caused a loss of riparian area function. Invasive plant populations have also impeded recreationists due to the spiny nature of the plants. The unique values of this watershed are at risk if invasive plants continue to increase and expand in size.

1.4 Public Participation, Scoping and Issues

Internal scoping took place with David Greenwood, BLM River Ranger in Briceburg, to gain information on weed populations and treatment logistics. Garrett Dickman, Biologist of Yosemite National Park, was contacted regarding the Interagency Agreement for herbicide applications with the Yosemite National Park weed crew.

This EA will be posted on the BLM Mother Lode Field Office internet website for a formal 15-day public comment period in February 2014.

1.5 Conformance with Applicable Land Use Plans

The proposed action is consistent with the Sierra Resource Management Plan Record of Decision (ROD), approved in February 2008. In Section 2.4 of the ROD for Vegetative Communities, it lists the following objectives: 1) Manage vegetation (including invasive species removal) to improve habitat conditions for particular wildlife species; and, 2) Control invasive species and increase native plant species using early detection, rapid response, and prevention measures.

Section 2.4 also lists the following management actions:

> Prevent, eliminate, and/or control undesired non-native vegetation or other invasive species using an Integrated Pest Management approach that combines biological, cultural, physical, and chemical tools to minimize economic, health, and environmental risks.
>
> Use prescribed fire, mechanical mastication, herbicides, manual removal, seeding, propagation, and planting or combinations of these methods to promote healthy, diverse vegetation communities.
>
> Implement and meet national BLM policies consistent with the Partners Against Weeds Initiative and Executive Order 13112.

The proposed action is also in conformance with the Merced Wild and Scenic River Management Plan (BLM 1991). It is clearly consistent with the specific area objectives, including objectives A and B which mandate preservation of the viewshed and riparian habitat. Weed control, as proposed, would help preserve the viewshed and riparian habitat.

1.6 Tiering to the Bureau-wide Programmatic Vegetation EIS

This EA tiers to the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) (BLM 2007a), which analyzed the impacts of using herbicides (chemical control methods) to treat invasive plants on public lands. In addition, this EA incorporates by reference the *Vegetation Treatments on BLM Lands in 17 Western States Programmatic Environmental Report* (PER) (BLM 2007b), which evaluated the general effects of non-herbicide treatments (i.e., biological, physical, cultural, and prescribed fire) on public lands. The PEIS identifies impacts to the natural and human environment associated with herbicide use and appropriate best management practices (BMPs), standard operating procedures (SOPs), mitigation measures, and conservation measures for avoiding or minimizing adverse impacts. The PER describes the environmental impacts of using non-chemical vegetation treatments on public lands.

The PEIS identifies priorities including protecting intact systems; maintaining conditions that have led to healthy lands; and applying mitigation measures to minimize soil and vegetation disturbance and avoid introductions of invasive species. Vegetation treatment priorities identified in the PEIS (pg. 2-7) include:

- Use effective nonchemical methods of vegetation control where feasible.
- Use herbicides only after considering the effectiveness of all potential methods.

Several management objectives in the PEIS (pg. 2-7) are considered when determining appropriate treatment of an infestation:

- Containment to prevent weed spread from moving beyond the current infestation perimeter;
- Control to reduce the extent and density of a target weed;
- Eradication to completely eliminate the weed species including reproductive propagules (this is usually only possible with small infestations).

1.7 Relationship to Statutes, Regulations, and Plans

The Mother Lode Field Office has prepared this IWM Plan in compliance with Department of Interior (DOI) and BLM policy and manual direction, including **DOI Manual 517 (*Integrated Pest Management*)** and **BLM Manual Section 9015 (*Integrated Weed Management*)**.

Several Federal laws, regulations, and policies guide BLM management activities on public lands. The ***Federal Land Policy and Management Act of 1976*** **(FLPMA)** directs the BLM to manage public lands "in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values." The ***Carlson-Foley Act of 1968*** and the ***Plant Protection Act of 2000*** authorize and direct the BLM

to manage noxious weeds and to coordinate with other Federal and state agencies in activities to eradicate, suppress, control, prevent, or retard the spread of any noxious weeds on Federal lands.

The ***Federal Noxious Weed Act of 1974*** established and funded an undesirable plant management program, implemented cooperative agreements with state agencies, and established integrated management systems to control undesirable plant species. The ***Noxious Weed Control Act of 2004*** established a program to provide assistance through states to eligible weed management entities to control or eradicate harmful and non-native weeds on public and private lands. **Executive Order 13112*, Invasive Species***, directs Federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause (BLM 2007a).

The BLM has also produced national-level strategies for invasive species prevention and management. These include ***Partners Against Weeds*** (BLM 1996), which outlines the actions BLM will take to develop and implement a comprehensive integrated weed management program; and ***Pulling Together: National Strategy for Invasive Plant Management*** (BLM 1998), which illustrates the goals and objectives of a National invasive plant management plan (prevention, control and eradication). The Federal Interagency Committee for the Management of Noxious and Exotic Weeds is leading a national effort to develop and implement a ***National Early Detection and Rapid Response System for Invasive Plants in the United States*** (FICMNEW 2003). The primary long-term goals of the proposed system are to detect, report, and identify suspected new species of invasive plants in the United States.

The EPA regulates pesticides (including herbicides) under the ***Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1972*** as amended in 1988. This Act establishes procedures for the registration, classification, and regulation of all pesticides. Before any herbicide may be sold legally, it must be registered by the EPA. The EPA may classify a pesticide for general use if it determines that it is not likely to cause unreasonable adverse effects to applicators or the environment. A pesticide that is classified for restricted use must be applied by a certified applicator and in accordance with other restrictions.

2.0 Proposed Action and Alternatives

2.1 Proposed Action

BLM would take an integrated weed management approach to control invasive plants in the project area, specifically yellow starthistle, Italian thistle, and tree-of-heaven. Poison oak, a native plant which is present along the Merced River, may also be treated when found in developed recreation sites if it poses a risk to recreationists. The main project area includes the Merced River Campground Road (formerly the route of the Yosemite Valley Railroad) from Briceburg to the Mountain King Mine/end of the drivable road, approximately 5 miles in length. The abandoned railroad grade now serves as a hiking trail.

Additional treatment areas extend both upstream and downstream of the drivable roadway along the abandoned Yosemite Valley Railroad grade, from the BLM/Forest Service boundary (upstream) to the high pool mark of Lake McClure (downstream) for a total of 15 miles in length. Treatments would extend above and below the road and trail for approximately 100 feet

resulting in a total treatment area of about 150 acres. These additional treatment areas would not use the truck-mounted application technique; only backpack sprayers and manual treatments would be used away from the drivable road. The great majority of work would be conducted along the 5-mile section of the drivable Merced River Campground Road. Most infestations occur within 100 feet of the road; however, some populations do climb several hundred feet upslope of the roadway.

Yellow starthistle is found along the entire length of the road/trail corridor and extends above and below the road/trail, while Italian thistle is predominantly found along the last two miles of road/trail and is quite dense in a few open meadows above the road. Large infestations of tree-of-heaven are located in the Railroad Flat Campground. Poison oak is found throughout the canyon but would only be treated when it becomes problematic in developed recreation sites.

Yellow starthistle and Italian thistle control methods:

The manual approaches that have been used along the Merced River in the past would be supplemented with the use of herbicides. Over the past nine years, the BLM has worked with the Upper Merced River Watershed Council (UMWC) on weed control in the Project area. The Watershed Council receives grant funding for manual and mechanical weed control work along the Merced River. BLM funding paid for the hiring of California Conservation Crews (CCC) the first year for mechanical and manual weed treatments along the Merced River Trail from Railroad Flat Campground downstream to the North Fork Confluence. Once the UMWC grant funding started, BLM worked very closely with all aspects of the treatment project including the following: planning, inventory transects, field supervision of crews, and follow-up mechanical treatments. These grants organized through the UMWC used labor from the California Youth Authority (CYA) and California Department of Corrections (CDC) hand crews.

Hand-pulling of yellow starthistle and Italian thistle, and cutting the root below ground with a short handled mattock, would continue to occur on small isolated occurrences and as a follow-up to herbicide application. Because of the different timing of the growth and flowering of these species, each would require a separate control effort. String trimmers may be used on larger clusters of plants with a vertical growth form. Because this tool cannot cut the plants below the lowest node, regrowth is possible. However, if the string mowing is well-timed, the plants will have exhausted their carbohydrate reserves and will not regrow.

Herbicides would be used anywhere the weed populations are extensive in size. Herbicides would be applied using either a truck-mounted system or with backpack sprayers. The truck-mounted system would be operated by an Interagency/National Park Service (NPS) crew. It would consist of a 100 gallon tank mounted on a 1-ton pick-up truck with a pump and two 600-foot long hoses that connect to hand wands. The hoses are narrow diameter and high pressure so that they are lighter in weight and have enough pressure to reach far up the hill. Each hose has only one hand wand that the operator activates as they walk the treatment area. There is no "boom" on the truck.

Backpack sprayers would be used to treat any weeds that were missed during truck applications or for smaller, more isolated occurrences where only a small amount of herbicide is needed.

Clopyralid (e.g., Transline) would be used to treat both yellow starthistle and Italian thistle and would be applied in the spring (April-May) to Italian thistle and in the early summer (May-June) to yellow starthistle. Spot spraying would minimize the amount of herbicide applied. Clopyralid would be applied at a rate of 4-12 ounces/acre, depending on the growth stage of the plant. A higher rate would be used for more mature growth stages. If a late season treatment is needed, a 2% solution (or less) of aquatic glyphosate formulation, (i.e., Aquamaster), would be applied. Herbicide treatments would occur once a year until infestations were small enough that manual and mechanical control methods were adequate.

Herbicide treatments would comply with the U.S. Environmental Protection Agency label directions and follow BLM procedures outlined in BLM Handbook H-9011-1 (*Chemical Pest Control*) and BLM Manual Sections 1112 (*Safety*), 9011 (*Chemical Pest Control*), and 9015 (*Integrated Weed Management*) and meet or exceed State label standards. Herbicide applications would adhere to all State and Federal pesticide laws. All applicators that apply herbicides in the project area (i.e., certified applicators or those directly supervised by a certified applicator) would comply with the application rates, uses and handling instructions on the herbicide label, and where more restrictive, the rates, uses, and handling instructions developed by the BLM.

The original buffer of 25 feet from flowing/standing water (i.e., creek, river, etc.) would be followed for hand-spraying of non-aquatic formulations of glyphosate (Roundup PROMAX) and triclopyr (Garlon 4 Ultra or Garlon 3A). A buffer of 10 feet from flowing/standing water would be followed for hand applications of clopyralid (Transline). The aquatic formulation of glyphosate (Aquamaster), would be applied right up to the water's edge to provide control for those invasive species growing directly adjacent to the waterways.

Table 1.

Herbicide Buffer Distance from Water	***Herbicide***
0' (by water's edge)	Aquamaster
Up to 10' from water's edge	Transline
Up to 25' from water's edge	Roundup PROMAX, Garlon 4 Ultra, Garlon 3A

The purpose of the 25' buffer from water for applications of Roundup PROMAX and triclopyr formulations is because tadpoles and other aquatic organisms have been found to be very sensitive to the surfactant polyethoxylated tallow amine (POEA) included in popular formulations of glyphosate (e.g. Roundup). However, formulations that lack the surfactant, like Aquamaster, have been found to be relatively non-toxic (Relyea 2005). The use of a vegetable oil based adjuvant, (e.g., Competitor), or a crop oil concentrate adjuvant, (e.g., Agri-Dex), allows the increased efficacy provided by a surfactant but avoids the use of surfactants known to be toxic to aquatic wildlife. POEA surfactants have been shown to be toxic to amphibians, and nonylphenolpolyethoxylates (NPE) surfactants have been shown to be toxic to fish (rainbow trout were used in most studies) and some invertebrates, though usually at surfactant concentrations higher than normal application rates. To provide an extra margin of safety for aquatic wildlife, NPE surfactants will not be used in this project.

A BLM sensitive plant species, Mariposa clarkia (*Clarkia biloba subsp. australis*), occurs along the campground road, within the project area. The occurrences have been mapped in GIS and would be avoided, as per the Project Design Features listed below.

An interagency agreement would be renewed to transfer funds from BLM to the NPS for use of the truck-mounted system and NPS weed crew in herbicide applications. The NPS has the resources in terms of equipment and staffing to help fight the weed battle in the Merced River corridor, whereas the BLM would have great difficulty finding the equipment and labor to meet weed control goals.

Tree-of-heaven control methods:

Tree-of-heaven is found in the Railroad Flat Campground and populations are quite extensive. The stands contain both mature trees and smaller seedlings. Smaller seedlings would be hand-pulled, while the larger trees would be cut with a chainsaw or other hand tools and the cut stump would be wiped with herbicide, specifically triclopyr or glyphosate. According to the California Invasive Plant Council website (Cal-IPC 2011), effective application rates for tree-of-heaven are 15-20 percent triclopyr or 15-40 percent glyphosate. The goal would be to prevent it from spreading further into the campsites and into other uninfested areas. If time and money allow, BLM and potentially CDC would apply treatments to control this species following the higher priority treatments of yellow starthistle and Italian thistle.

Implementation of the Proposed Action would follow the Standard Operating Procedures for Applying Herbicides (SOPs) listed in Appendix A (Table 2-8 pg. 2-30-2-24 of the PEIS) and Mitigation Measures listed in Appendix B (Table 2-9 pg. 2-41-2-42 of the PEIS).

Poison oak control methods:

Because poison oak is a native plant, it would only be treated in those areas where it poses a risk to recreationists, such as in developed recreation sites. Hand-pulling and string-trimming is not effective for this species because it will quickly regrow from rootstock. A hand-application of glyphosate would be used to control this nuisance plant. Application rates would follow label specifications for poison oak control.

2.2 Project Design Features

- To avoid any exposure of the public to spray drift, the spray areas will be posted with "spraying, do not enter" signs on the day of spraying and restricted entry intervals specified by the herbicide label will be observed.

- To avoid drift of the spray mix reaching surface water, a 10' no-spray buffer will be observed around any open water during hand-application of clopyralid, per BLM PEIS specifications. Hand pulling, other manual/mechanical methods, or the hand-application of the aquatic formulation of glyphosate will be used for weed control in the buffer zone.

- To provide an extra margin of safety for aquatic wildlife, herbicides containing POEA (such as Roundup PROMAX) will not be applied within 25’ of water and surfactants containing NPE will not be used.

- To avoid drift, spraying will not occur if wind speeds exceed 10 mph.

- No spraying will occur if rain is predicted within 24 hours of the time of spraying.

- Mixing and loading operations will be conducted a minimum of 100' from any body of water, and there will be provisions for spill containment at the loading/mixing site.

- Protective equipment as directed by the herbicide label will be used.

- A copy of Material Safety Data Sheets will be kept at work sites.

- Herbicide labels will be followed for use and storage.

- A no-spray buffer of 100' will be observed around blue elderberry (*Sambucus mexicana*) shrubs to avoid any impacts to the Federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Applicators will be trained to recognize this species.

- To protect the Mariposa clarkia, applicators will be trained to recognize this species, and a no-spray buffer of a minimum of 15' will be observed around any clarkia occurrences. In the case of clarkia species that have not bloomed at the time of spraying, if the plants cannot be distinguished from the special status Mariposa clarkia, they will be treated as if they were the special status species, and the appropriate buffer will be observed.

- Avoid ground disturbance in areas identified by the BLM archaeologist as sensitive.

2.3 No Action

The no-action alternative would maintain the 25 foot chemical application buffer along water, and the aquatic formulation of glyphosate would not be applied any closer than 25 feet from water’s edge. Application of herbicides would continue as approved under EA CA-180-12-05. Hand-pulling, cutting the root below ground with a short-handled mattock, and the use of string trimmers would all be continued.

Person-power would be limiting in controlling weed species by hand within the 25 foot buffer along waterways. Over the past decade it has been a struggle to maintain partial control of the yellow starthistle and Italian thistle using only manual/mechanical methods due to limited funding and labor availability. Herbicide use allows for an increased treatment area while requiring less labor and funding. All of the weed control work would not be able to be accomplished with available personnel using only manual/mechanical control methods within the 25 foot buffer along open water.

2.4 Alternatives Considered but Eliminated from Detailed Analysis

An alternative that was considered but eliminated from further analysis included biological control which involves the intentional use of insects, nematodes, mites, or pathogens (agents such as bacteria or fungus that can cause diseases in plants) that weaken or destroy vegetation. Biological control is used to reduce the targeted weed population to an acceptable level by stressing target plants and reducing competition with the desired plant species. However, the yellow starthistle and Italian thistle are too widespread at this location to make biological control an effective option.

3.0 Affected Environment

The following critical elements have been considered for this environmental assessment, and unless specifically mentioned later in this EA, have been determined to be unaffected by the proposal: air quality, prime/unique farmlands, floodplains, hazardous waste, and environmental justice.

Area of Critical Environmental Concern (ACEC)

ACECs are defined in FLPMA as "areas within the public lands where special management attention is required to protect and prevent irreparable damage to important and unique historic, cultural, botanic, and scenic values, fish and wildlife resources, other natural systems or processes (rare or exemplary), or to protect life and safety from natural hazards." Administrative protections established through stipulations, withdrawals, avoidance, and/or allowable uses are uniquely prescribed by each individual area. The objective is to provide special management for natural areas requiring such and to protect and preserve the relevant and important values. ACECs currently designated in the Merced River corridor contain the following relevant and important values: wild and scenic and special status wildlife.

The project occurs entirely within the Merced River ACEC and a within a very small portion of the Limestone Salamander ACEC. Designated in 1986, the Limestone Salamander ACEC encompasses 1,728 acres of confirmed and potential limestone salamander habitat. The majority of the Limestone Salamander ACEC occurs outside of the project area on the south side of the Merced River, on moist northwest and east-facing steep slopes that the salamander prefers; however, a few small corners of the ACEC cross over the river to the north side into the project area. The 2,836 acre Merced River ACEC was designated in 1988 to protect the wild and scenic qualities of the Merced River prior to congressional designation of the Merced River as wild and scenic.

Cultural Resources

The prehistory of the area is known mainly from archaeological studies conducted in Yosemite National Park, along the upper reaches of the Merced River. These studies indicate that hunter gatherer groups inhabited Yosemite for thousands of years prior to historic contact in the 1800s, and that by late prehistory (1500 to historic contact about 150 years ago) these groups had a lifestyle typical for Californian hunter-gatherers of the western Sierra. Acorns, deer, and salmon were of primary importance to them. The upper reaches of the Merced River watershed were just

one portion of a much larger area used by prehistoric people as they went about procuring these and other resources.

Less is known about the prehistoric land-use in the BLM-administered portions of the Merced River watershed between 3000 and 1000 ft in elevation. Bedrock milling stations and camp sites have been found on BLM-administered land in the watershed within this elevation range, and it seems certain that prehistoric people hunted, gathered, fished, and sought other resources within this part of the watershed, at least on a temporary basis, as part of their seasonal rounds (annual migration into the high country). More substantial settlement appears to have been focused on the river's tributaries on the canyon rim. At the time that Euro-Americans and other outsiders arrived in droves during the mid-1800s, the Miwok - thought to be the descendents of the area's prehistoric people - were living in the Merced River watershed. Recently the UC Davis archaeology field school has conducted archaeological research focusing on prehistoric sites on BLM-administered lands in the Merced River watershed. Analysis of data collected during fieldwork is ongoing and the results are expected in the near future.

The famous American explorer, soldier, and political leader John Fremont was among the earliest Euro-Americans to settle in the area. In 1847, he acquired a large Mexican land grant called Las Mariposas that included the present-day town of Mariposa. Not long after the start of the Gold Rush in 1848, prospectors began scouring his land, the Merced River canyon, and elsewhere in the region for placer gold. Sherlock Creek, named for the Sherlock brothers, may have been one of the earliest creeks to be mined in the Merced River canyon. Placer mining waned by the early 1850s as the easily found placer gold became depleted. By the late 1800s, hardrock gold mining became a dominant industry within the Merced River watershed and Mariposa County generally. Production may have peaked during 1860s-1880s, (mining activity/returns for this period were poorly documented). Many of the operations, particularly those that endured well into the 1900s, appear to have been small scale, with few workers, sporadic development, shoestring budgets, and hodgepodge arrays of mining and milling machinery. By the mid-1900s, the mines still being developed were typically worked on the side by one or two men, who typically were involved full-time in ranching or some other occupation. Mines located on (or partially on) BLM-administered land in and around the Merced River canyon include the Schroeder, Diltz, Our Chance, Permit, Landrum, and Governor/Live Oak. The Jumper, Blue Moon, Orange Blossom, Mt. Gains, and Badger are located farther west, near Hornitos. The Mt. Gains was among the most productive mines in the county and was a large-scale operation during the 1930s.

The rugged brushy terrain of the Merced River canyon appears to have hindered ranching, farming, and homesteading during the late 1800s, but there was enough timber here to support commercial logging, particularly at higher elevations. By the early 1900s, many of the best virgin stands had been logged by operators like the Yosemite Lumber Company. Other industrial/commercial endeavors were attempted in lieu of gold mining and logging. The opening of Yosemite Valley as a major tourist destination by the tum of the century reinvigorated and changed the economy of Mariposa County. The Yosemite Valley Railroad, built in 1907, was designed to help get people to and from Yosemite Valley. The railroad grade ran along the Merced River from Merced in the Central Valley to EI Portal just west of Yosemite Valley. The

train passed through the BLM-administered part of the canyon, including portions of the Mountain King Mine complex, Railroad Flat, McCabe Flat, and Briceburg.

The patented Mountain King Mine was discovered sometime during the mid- to late 1800s, but little is known about its early history. By 1904, the mine was being developed by the Omparisa Mining Company headed by H. C. Austin. A five-stamp mill was installed in 1905 and was increased to ten stamps later the same year. The mine also had a hydroelectric facility built by PG&E. The remains of the facility include a dam located on BLM-administered land, still visible today. The development of the mine was sporadic during the 1910s when the Mountain King Mining Company took over operations. The company called it quits in 1922 because operating costs exceeded production returns. After a few years of development under lease, the mine was abandoned.

Railroad Flat was the location of a small town called Hart associated with the Mountain King Mine. The town reportedly consisted of houses, and school, and perhaps a few businesses. There is a small cemetery (with historic and modem graves) at Railroad Flat, located near the BLM campground that now occupies much of the area. McCabe Flat, also a BLM campground, has seen sporadic mining and residential activity since the Gold Rush.

During the 1910s, Briceburg consisted of a train station/post office/store/freighting office owned by William Brice, the Brice house, some small outbuildings, and a footbridge across the river. The construction of the highway to Yosemite Valley during the 1920s (current Highway 140) led to the abandonment of the Yosemite Valley Railroad by the end of World War II. (The railroad grade survives, in part, as an access road and recreational trail.) A bridge was put in across the Merced River at Briceburg to move supplies from the railroad to the construction sites. Convict workers from San Quentin were used to build the highway. A residential camp (Camp E) for the workers and their supervisors was placed along the highway near Briceburg. The camp consisted of various tent structures occupied from 1923 to 1925. Built in 1927, the River View Tavern (later known as the Briceburg Inn) was a full-menu Italian restaurant and Standard Oil gas station located along the highway at Briceburg. A motel was added later. For years, the Briceburg Inn catered to travelers on the highway connecting Mariposa and Yosemite. In the late 1980s, the building was acquired by BLM and turned into a visitor center. The current bridge at Briceburg was put in during the 1930s as part of the Ponderosa Way fire break project.

Human Health and Safety

Physical Control – Treating weeds by pulling and digging with a mattock would not affect human health or safety. The use of string trimmers to remove weeds at ground level prior to seed development could pose a threat to the safety of the user if appropriate precautions were not taken.

Chemical Control – Use of herbicides for controlling invasive plant species poses some potential risk of adverse impacts on human health and safety. Therefore, the PEIS (BLM 2007a) included a Human Health Risk Assessment (HHRA) to evaluate herbicide use on public lands. The HHRA addressed occupational receptors (who mix, load, transport, and apply herbicides) and public receptors (hikers, hunters, and anglers; swimmers, berry pickers; Native Americans; and residents).

Hydrology and Water Quality

The Merced River is a stable bedrock and boulder controlled stream flowing through a relatively narrow canyon. The riparian area is classified as a "Valley Foothill Riparian Area", which is dominated by cottonwood, alder, willow, and ash.

The North Fork Merced River is a large tributary that enters the project area approximately one mile up from the “high pool” mark of Lake McClure. The lower five miles of the North Fork are intermittent with a bedrock and boulder channel. Halls Gulch is a large tributary entering the Merced in the middle of the project area. The channel is stable with little risk of instability. Sediment storage is abundant within the mined floodplain. There is a bridge over Halls Gulch just above the confluence with the Merced River. Sherlock Creek is a B2/3 stream type (boulder/cobble) with a 25 foot width floodplain. The lower energy of this channel and the pocket pools associated with the bed material make it vulnerable to sedimentation. With increased sediment load, crevices have a high likelihood of filling, reducing habitat for the yellow legged frog and fish found in the channel.

Water for domestic consumption in the town of Mariposa is withdrawn from the Merced River a little over 1 mile downstream of Briceburg inside the project area. It is withdrawn seasonally, mostly in the summer months, and pumped to a reservoir close to the town of Mariposa. The next diversion of water for domestic consumption is more than 10 miles downstream of the project area in Lake McClure.

Invasive Species

Invasive weeds known to occur in the project area are yellow starthistle, Italian thistle, and tree of heaven. As mentioned previously, yellow starthistle (YST) is fairly dense on both sides of the Merced River Road from Briceburg west to the Railroad Flat campground while Italian thistle is predominantly found along the last two miles of road/trail and is quite dense in a few open meadows above the road. Large infestations of tree-of-heaven are located in the Railroad Flat Campground.

YST is a long-lived winter annual with a deep, vigorous taproot, and bright, thistle-like yellow flowers with sharp spines surrounding the base. Seed output can be as high at 30,000 seeds per square meter, with about 95% of the seed being viable soon after dispersal. Most seeds germinate within a year of dispersal, but some can remain viable in the soil for more than three years. YST seeds germinate from fall through spring. After germinating, the plant initially allocates most of its resources to root growth. By late spring, roots can extend over 3 feet into the soil profile, although the portion above ground is a relatively small basal rosette. This allows YST to out-compete shallow-rooted annual species during the drier summer months when moisture availability is limited near the soil surface. It also helps explain why YST survives well into the summer, long after other annual species have dried up, and why it can re-grow after top removal from mowing or grazing (BLM 2006).

Italian thistle is an annual which varies in height from ankle to head high. Flower heads are covered with densely matted, cobwebby hairs. The thimble-sized, pink to purple flowers are

clustered in groups of two to five. It is spread by seeds on wind, vehicles, and animals. Seeds can disperse by wind an average of seventy-five feet from the parent plant and can travel more than 325 feet in strong winds. Italian thistle dominates sites and excludes native species, crowding out forage plants in meadows and pastures. The blanketing effect of overwintering rosettes can severely reduce the establishment of other plants, as the leaves of the rosette can become erect in dense stands. Most animals avoid grazing on it because of its spines. The spines also discourage grazing on neighboring forage species (Cal-IPC 2012).

Tree-of-heaven is a deciduous tree thirty to sixty-five feet high, with gray bark, and generally with root sprouts. It has large compound leaves with several circular glands on the underside of most leaflets. The crushed foliage has an unpleasant odor. By producing abundant root sprouts, tree-of-heaven creates thickets of considerable area, displacing native vegetation. Although it may suffer from root competition by other trees already established, usually it competes successfully with other plants. In California its most significant displacement of native vegetation is in riparian zones. It also produces allelopathic chemicals that may contribute to displacement of native vegetation. A high degree of shade tolerance gives ailanthus a competitive edge over other plant species (Cal-IPC 2012).

Recreation

There are three recreation resources in the project area: (1) The Merced River is designated a Wild and Scenic River. The upper portion of this river section, from the US Forest Service boundary to approximately the Mountain King Mine, is designated recreational. The lower section, from Mountain King Mine to the high water mark of Lake McClure, is designated wild. (2) Along the Merced River there is the Merced River Special Recreation Area, with three campgrounds, two day-use areas, two boating put-in/take-outs access points, a portage facility, a visitor's center, an access road, and trail along the old Yosemite Railroad grade. Rafting on the Merced River is popular, supporting a number of commercial outfitters. The campgrounds along the river are also popular. Local users and visitors from out of the area fill the campgrounds most weekends during the spring and summer. (3) The Merced River Wilderness Study encompasses much of the North Fork Merced River drainage but also spans the Merced River and includes lower Sherlock Creek and much of the ground around Telegraph Hill. General recreation is popular throughout the project area along the Merced River. Depending on the season, visitors enjoy the following activities all along the river: walking/hiking, running, dog walking, picnicking, wildflower viewing, camping, mountain biking, fishing, whitewater rafting, inner-tubing/floating (at low water), swimming, and gold prospecting/panning.

Soils

The soils within the project area are derived from basic and metabasic igneous rock or from metasedimentary rock. The soils have developed under chaparral, oak woodland or forest vegetation and are typically shallow to moderately deep on mountain slopes or ridges and moderately deep to very deep on toe slopes. Soils were mapped and identified by the USDA-NRCS. Dominant soils include the Maymen-Mariposa and Auburn-Daulton associations. Maymen and Mariposa soils are well-drained, very shallow or shallow soils weathered from material weathered from metasedimentary rock on moderately steep to very steep slopes. Auburn

and Dalton soils are well-drained, very shallow or shallow soils derived from materials weathered from schist and slate on gently sloping to very steep slopes. Other included soils are the Boomer, Josephine, and Trabuco series. Surface textures are commonly loam, silt loam, or sandy loam with coarse fragments ranging from 5 to 60 percent consisting of gravels, stones, boulders, channers, and flagstones. Erosion hazards are severe due to long steep slopes. There are areas of exposed bedrock typically on the shoulders of steep slopes.

Vegetation

As mapped by the USDA Forest Service Remote Sensing Lab (November 2006), the primary plant communities in the area were chamise chaparral (39.0%), lower montane mixed chaparral (12.2%), interior live oak woodland (14.4%), blue oak savannah (5.8%), canyon live oak woodland (3.6%), black oak woodland (0.9%), mixed hardwood (0.8%), non-native annual grassland (5.1 %), gray pine (9.0%), west side ponderosa pine forest (7.9%), and valley-foothill riparian forest (0.1 %).

Chamise chapparal dominates on south facing slopes. Forest and hardwood communities dominate on north facing slopes and at higher elevations. Few of the tributary drainages or the Merced River at this elevation are truly perennial, but many have substantial reaches with riparian vegetation. Chaparral species include chamise, whiteleaf manzanita, mewukka manzanita, buckbrush, toyon, western mountain mahogany, flowering ash, golden fleece, blue elderberry, keckiella, holly-leaf redberry, and poison oak. Associated tree species include knob cone pine, gray pine, sugar pine, California juniper, and interior live oak. Many of the same species are found in the oak woodland and forest sites with additions like ponderosa pine, incense cedar, canyon live oak, black oak, blue oak, and woolly leaf ceanothus.

Special status plant species:

A BLM Sensitive plant species, Mariposa clarkia, is known to occur in numerous locations within the project area. Mariposa clarkia is an annual which generally favors habitats of chaparral and cismontane woodlands and occurs in openings where there is little competition from other vegetation. It is frequently found in disturbed areas or areas with accelerated erosion like steep road cuts.

Visual Resources

According to the Sierra Resource Management Plan, the Merced Wild and Scenic River corridor and the North Fork Merced River are to be managed for VRM Class I. The Merced River Wilderness Study Area is to be managed for VRM Class II.

Wildlife

General wildlife:

In general, the fisheries of the region tend towards the warm water type; however, a broad cross section of native and introduced, warm water and cold water species occur on the Merced

system. Smallmouth bass (*Micropterus domieui*) predominates in a year-round warm water sport fishery, while rainbow trout (*Salmo gairdnerii*) and brown trout (*S. trutta*) are present in the winter months and during spring runoff (Finney pers. comm.). The invasive red-eyed bass has recently (2007) been found in the river above Lake McClure (Stillwater Sciences 2008).

Several species of amphibians and reptiles occur in the Merced River drainage including several salamanders, frogs and toads, western pond turtle (*Clemmys marmorota*), and several lizard and snake species. Maddox (pers. comm.) reported one known occurrence of the coast homed lizard (*Phyrnosoma coronatum*), a BLM sensitive species. The limestone salamander (*Hydromantes brunus*) and the foothill yellow-legged frog (*Rana boylii*) are discussed below among special status species.

Over 200 species of birds occur seasonally or as residents in the Sierra Nevada (Verner and Boss 1980). Many of these species can be found in the Merced River watershed.

At least 94 species of game and nongame mammals occur in the Sierra Nevada (Verner and Boss 1980). Several of these species occur in the Merced River watershed.

Special status animals:

Two special status animal species occur within the project area. These are the limestone salamander *(Hydromantes brunus),* state-listed threatened species and state-listed fully protected species, and foothill yellow-legged frog *(Rana boylii),* BLM sensitive species. Potential habitat (elderberry shrubs) for a third special status species occurs within the greater Merced River Special Recreation Area. This is the valley elderberry longhorn beetle *(Desmocerus californicus dimorphus),* a federally-listed threatened species. Valley elderberry longhorn beetle have not been documented to occur within the Project Area.

The limestone salamander is listed as threatened under California's Endangered Species Act. The range of the limestone salamander is restricted to 35 occurrences along a 20-mile stretch of the Merced River between the headwaters of Lake McClure, near the community of Bagby, and the mouth of Sweetwater Creek, near Briceburg. (Lehman 1989; Sutton 2006). There is also one isolated sighting on the South Fork Merced on Sierra National Forest near Hite Cove (Sutton 2006). Twenty-four of 35 confirmed population sites, and 29 of 38 sites containing suitable habitat are on BLM lands. The species occurs nowhere else in the world. The largest known population occurs at Hell Hollow (Tordoff 1981). Limestone salamander potential habitat is characterized by 1) northwest to east facing slopes 34 degrees and steeper; 2) numerous rock outcrops and moss covered talus, and; 3) oak/buckeye woodland with a thick shrub understory. The salamander spends much of the year deep in the talus, and only emerges to the surface during the wet season.

BLM designated the Limestone Salamander ACEC in 1986 to include confirmed sites and potential habitat of the limestone salamander. The limestone salamander is one of California's rarest native amphibians. BLM expanded the ACEC area to include more confirmed sites and potential habitat of the limestone salamander in the Sierra RMP approved February 2008. The ACEC encompasses approximately 2,000 acres of confirmed and potential limestone salamander

habitat and adjacent BLM lands along the Merced River and its tributaries in western Mariposa County. Eight Limestone Salamander ACEC units occur within the greater Merced River Recreation Area.

The foothill yellow-legged frog is listed as a BLM sensitive species. The situation for foothill yellow-legged frogs in the Sierra Nevada is bleak; there are no populations in the southern Sierra Nevada foothills that are likely to remain viable for more than a decade. Populations in the northern Sierra are more numerous and generally larger, but they may be in decline as well. Foothill yellow-legged frogs are susceptible to a wide range of environmental impacts including loss of habitat, pesticides, competition/predation from nonnative species (e.g. warm-water fish, bullfrogs, crayfish), disease, water impoundments, logging, mining, and grazing in riparian zones. In the Sierra Nevada foothills of California, air-borne pesticides (that move east on the prevailing winds blowing across the agricultural lands of the Central Valley) are likely to be the primary threat to foothill yellow-legged frogs (LeNoir et al. 1999; Sparling et al. 2001; Hayes et al. 2002b). The populations of foothill yellow-legged frogs in greatest decline are all downwind of highly impacted (mostly agricultural) areas, while the largest, most robust frog populations are along the Pacific coast.

This species inhabits partially shaded, rocky streams at low to moderate altitudes, in areas of chaparral, open woodland, and forest (Nussbaum, Brodie and Storm 1983; Hayes and Jennings 1988). It seeks cover at the bottom of a pool when startled. Its breeding and non-breeding habitats are the following, in order of decreasing favorability: (1) partially shaded, small perennial streams, 30-1,000 m asl, with at least some cobble-sized rocks, riffle areas and a stream depth rarely greater than 1 m; (2) intermittent, small, partly shaded, rocky streams displaying seasonal riffle habitat; (3) large (consistently greater than 1 m in stream depth), partly shaded, perennial streams with rocky or bedrock habitat; and (4) open perennial streams with little or no rocky habitat. Breeding takes place in pools of streams, and eggs are usually attached to gravel or rocks at the edge of pools or streams (Nussbaum, Brodie and Storm 1983). In northern California, eggs were found attached to cobbles and boulders at lower than ambient flow velocities, near confluences of tributary drainages in wide, shallow reaches, and most breeding sites were used repeatedly (Kupferberg 1996).

Extant populations of foothill yellow-legged frogs are not evenly distributed in California. In the Pacific northwest, 40% of the streams support populations of foothill yellow-legged frogs, while that number drops to 30% in the Cascade Mountains (north of the Sierra Nevada), 30% in the south coast range (south of San Francisco), and 12% in the Sierra Nevada foothills. Foothill yellow-legged frogs have been found most recently (2010) by Mike Sutton in Halls Gulch. In 2008 foothill yellow-legged frogs were found along the main Merced near Hall's Gulch (Dobrovolny, pers. comm.), as well as along Sherlock Creek and the Main Merced at the mouth of Sherlock Creek (Unpubl. BLM records). The Sherlock Creek population appears to be robust, with tadpoles, morphs, and adults all seen within the stream. The portion of the stream with the largest numbers of frogs extends from Drunken Gulch downstream to the Merced River. However, there are frogs using the Sherlock Creek upstream of Drunken Gulch as well.

Valley elderberry longhorn beetle (VELB) *(Desmocerus californicus dimorphus)* is listed as threatened under the Federal Endangered Species Act. Because VELB is an obligate specialist on

elderberry, reduction in the amount or quality of suitable riparian woodland habitat has had a significant impact to the VELB. Riparian woodland habitat has been largely reduced and severely fragmented by flood control, intensive agricultural production, and urbanization, especially in the Central Valley of California. Another possible threat to VELB is the invasion of the argentine ant, an introduced ant species that has impacted native ants and other ground-dwelling arthropods. Argentine ants may predate on VELB eggs.

The VELB is completely dependent on its host plant, elderberry *(Sambucus* species), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley and associated foothills up to 3000 feet. *Sambucus* serving as hosts for the VELB occurred in several plant communities: riparian forest, savanna or grassland, oak woodland, and mixed chaparral-foothill woodland. The VELB was more frequently encountered in riparian forest margin and elderberry savanna than other situations. Host plants grew in the open, without overstory, and also as understory plants. Elderberry shrubs/trees with many exit holes were most often large, mature plants; young stands were seldom infested. The VELB seems to prefer stems for larval development and pupation which are larger than an inch or two in diameter. The beetle was most likely to occur in situations where plants were not isolated from one another.

The beetle has only been found in association with its host plant, elderberry *(Sambucus* spp.). Adults feed on the foliage and perhaps flowers, and are present from March through early June. During this period the beetles mate, and the females lay eggs on living elderberry plants. The eggs are about 2.5-3.0 mm long, reddish brown, and are shaped like an elongate football with longitudinal ridges. The female places the eggs singly or in small groups in bark crevices or at the junctions of stem/trunk or leaf petiole/stem. Presumably the eggs hatch shortly after they are laid. Larvae bore into the pith of larger stems and roots. When larvae are ready to pupate, they work their way up from the roots through the pith of the elderberry, open an emergence hole through the bark and return to the pith for pupation. The entire life cycle encompasses two years; however, the duration of each life stage is unknown. Adult emergence occurs at about the same time the elderberry flowers. There is a known occurrence of elderberry shrubs on Black Mountain Road near the North Fork Merced inside the Telegraph Fire perimeter. There are also known occurrences within areas impacted by fire suppression activities. These are Buckhorn Road, Schilling Road, and Rancheria Road. All of these know occurrences are outside the immediate proposed treatment area for herbicide application along the Merced River.

4.0 Environmental Effects

4.1 Impacts of the Proposed Action and Alternatives

Area of Critical Environmental Concern (ACEC)

Activities proposed within ACECs must consider and protect the identified relevant and important values. The values of the Limestone Salamander ACEC, protection of the limestone salamander, would not be affected by the Proposed Action. The portions of the ACEC that overlap with the project area are not known to support limestone salamanders nor do they contain suitable habitat for this species. Limestone salamanders and their habitat would be unaffected by the weed treatments because they would take place outside of occupied or suitable limestone salamander habitat.

Visitors to the Merced River ACEC may be impacted by the inconvenience associated with temporary closure of treated areas. Visitors may also acknowledge indirect, short-term, site-specific negative effects associated with dead or dying vegetation following herbicide applications. Human-caused landscape alterations can negatively impact the physical (including visual) and social qualities of the recreation setting in areas perceived to be relatively "natural" and dominated by natural ecological processes. However, wilderness and special areas that are dominated by invasive species are usually less visually aesthetic and deemed to be impacted by humans and hence not "natural."

Cultural Resources

The proposed action was analyzed by the BLM archaeologist to determine whether it would affect significant cultural resources, in accordance with Section 106 of the National Historic Preservation Act. The analysis included a backgrounds record search. The entire project area has been intensively inventoried for cultural resources by BLM and other archaeologists over the years. Mechanical treatment is proposed and has some potential to negatively affect sensitive archaeological sites and features, such as prehistoric occupation sites with artifact deposits/midden. Certain cultural resources in the project area will therefore be avoided or other treatment methods will be applied in and near these resources. In 2012 the BLM initiated Native American consultation by sending letters to local groups to ascertain if they have any comments, questions, suggestions, or concerns regarding this proposed action. Of particular relevance were inquiries as to whether there were traditional collecting areas for plant materials in the project area. If traditional collecting sites are identified in the project area, the BLM will work with Native Americans to address any concerns. A no-spray zone may be established to avoid impacts to the habitat at the collecting site and to ensure the safety of the collectors. Other kinds of cultural resources (lacking sensitive archaeological remains) in the project area such as the abandoned Yosemite Valley Railroad grade would not be negatively affected

Human Health and Safety

Physical Control - The risks to the operator from using a string trimmer would be minimized by wearing appropriate Personal Protective Equipment and conducting a tailgate safety session prior to use. String trimmers would be operated well away from public users.

Chemical Control - Exposure risks to occupational receptors consist primarily of direct exposure (whether through the skin, inhalation, or incidental ingestion) by workers who mix, transport, or apply the herbicides. Greatest exposure doses are likely to be associated with mixing herbicides, pouring the contents into containers for use in application, and cleaning up any residue or minor spillage. An additional risk to applicators results from exposure via dermal contact, inhalation, or incidental ingestion while walking or riding/driving through an herbicide mist. Most occupational exposures result in temporary skin or eye irritation or in other short-term effects such as nausea, dizziness, or reversible nervous system abnormalities. Long-term effects are much less common but can include damage to organs, the nervous system, or the immune system and potentially inheritable mutations that can be passed on to offspring.

Both the short-term and long-term effects to occupational receptors can be greatly reduced by adherence to operational safety guidelines, use of protective clothing, equipment checks, and

personal hygiene. BLM has attempted to minimize risks to applicators involved with herbicide treatments on public lands by specifying that their use be limited to certified herbicide applicators, except in a few special circumstances (e.g., spot applications to one or a few plants by trained BLM personnel using pre-mixed, consumer-grade herbicides). Professionals who are trained, experienced in handling chemicals, and use suitable personal protective equipment are much less likely to be exposed at potentially toxic levels than are those who use herbicides infrequently and may be unaware of the risks and how to minimize them.

Public receptors within the Project area consist mostly of residents and outdoor recreationists. These receptors would be exposed less frequently and at much lower doses than would occupational workers who deal with herbicides regularly and at higher concentrations.

The HHRA portion of the PEIS (BLM 2007a) addressed a total 24 herbicide active ingredients, of which 18 are currently approved for use on BLM lands, including clopyralid, glyphosate, and triclopyr. Risks to humans were evaluated in relation to both occupational and public receptors, based on the toxicity of each compound and the assumed exposure dose under three assumed scenarios: routine exposure at typical application rates, routine exposure at maximum application rates, and accidental exposure. Routine exposure of workers consists of dermal contact, inhalation, and incidental ingestion while mixing or applying an herbicide. Accidental exposure of workers results from a spill or direct spray onto the skin. For public receptors, routine exposures result from typical uses of public lands that have been treated, or of both public and private lands onto which an herbicide has drifted. These exposures include dermal (skin) contact with foliage or surface water, inhalation of a pesticide mist, or ingestion of fruits onto which an herbicide has settled. Accidental exposures of the public include entering an area that is being or has recently been treated or (for some compounds) drinking water or eating fish from a waterbody into which the compound has been spilled.

The three herbicides proposed for use in the Project area - clopyralid, glyphosate, and triclopyr - showed slight to very slight toxicity to humans and no carcinogenicity. Risks were generally rated as low to none for both receptor groups and all three exposure rates. The HHRA portion of the PEIS found no risks to humans from the inert ingredients associated with the herbicides, including adjuvants.

To minimize risks to occupational and public receptors from exposure to herbicides, implementation of the Proposed Action would follow the Project Design Features, and SOPs and Mitigation Measures in Appendices A and B.

Hydrology & Water Quality

This project should have little if any effect on the hydrology of any of the tributaries of the Merced River, much less the river itself. Water quality effects should be negligible for several reasons. Manual and mechanical weed removal would only disturb small amounts of soil and should not result in increased erosion. If well-vegetated buffers between treated areas and water bodies are left untreated, they can intercept herbicides and mobilized sediment, reducing the potential for these contaminants to reach surface water. To avoid drift of the spray mix reaching surface water, a 10 or 25 foot no-spray buffer, depending on the chemical, will be observed

around any open water during hand-application of non-aquatic herbicide formulations, per BLM specifications (See Table 1). Hand pulling, other manual/mechanical methods, or the hand-application of the aquatic formulation of glyphosate will be used for weed control in the buffer zone. Spot spraying would result in the application of only a small amount of herbicide. No spraying will occur if rain is predicted within 24 hours.

Treatment with chemicals would follow a number of other SOPs and mitigation measures outlined in Appendices A and B. These measures would minimize the possibility of accidental contamination of water bodies and groundwater by herbicides due to runoff, drift, misapplication/spills, and leaching. The aquatic labeled herbicides would not impact water quality if used according to label rates of application.

Drift will be minimized by applying the SOP that calls for canceling spraying when wind speeds exceed 10 miles per hour. Hand spraying itself minimizes drift by the low height at which the spray is released and the much lower volume of spray mix needed to only spray target plants. Reducing the number of acres degraded by weed infestations would reduce sedimentation in water bodies, improve nutrient cycling, and help return the landscape to normal fire cycles (BLM 2007a). If properly applied, the herbicide treatments in the Proposed Action—particularly in riparian areas of 303(d) listed watersheds—would improve water quality and quantity, thus enhancing fish and wildlife habitat and recreational opportunities in the long term.

Invasive Species

In general, vegetation treatments have the potential to affect most plant species in much the same way: All are intended to cause mortality or injury to target plants, which may vary in intensity and extent. Herbicides offer an effective and often resource-efficient means of treating and managing undesirable vegetation. Physical methods are often more time and labor intensive, and can create soil disturbance which can lead to additional weed establishment.

Eradicating and/or controlling weed infestations benefits native plant communities by decreasing the growth, seed production, and vigor of undesirable species, thereby releasing native species from much of this competition. However, if too little vegetation remains following treatment, other weeds may invade the area. Because the yellow starthistle and Italian thistle are not arranged in large continuous patches, no large areas would be sprayed and potentially cleared of vegetation. Instead small holes in the overall vegetation would occur when plants die. Native species which already occur at the site should fill in the holes left after weeds are treated.

Recreation

Treating invasive plants would enhance the qualities of the Wild and Scenic River designation by returning vegetation communities to more native ecosystems. Except for the days when herbicides would be applied, there should be no impact to recreation from this project. The day of spraying, signs would be posted to indicate that spraying is occurring, and this may deter some visitors from using the area. If there are visitors in the area, they will be asked to leave the immediate vicinity of target sites before they are sprayed, so no visitors are subjected to spray drift. After the herbicide has been applied and taken effect, some small patches of dead or dying

vegetation may be noticed. Because of spot spraying, the vast majority of the vegetation would remain intact, mostly shielding the small dead zones from view.

Soils

Manual techniques, both hand pulling and digging of plants with a tool, produce loosened soil that is subject to erosion. However, these techniques would be used primarily where the weeds are scattered, so only a small portion of the soil surface would be affected and the disturbance with these techniques is relatively shallow.

Herbicide applications may result in contact with soils, either intentionally for systemic treatments, or unintentionally as spills, overspray, spray drift, or windblown dust. Contact may also occur as a result of herbicide transport through plants to their roots where herbicide may be released into soil (BLM 2007a). The treatment method with the greatest potential for adverse short-term effects on soils is herbicide use on dense monotypic stands leading to substantial loss of vegetation cover. Application of the Project Design Features, and the SOPs and mitigation measures in Appendices A and B would minimize soil disturbance and prohibit potentially erosive actions.

The Proposed Action could also affect soil physical, chemical, and/or biological properties. These changes could include changes in soil structure (e.g., decreased percentage of fines), porosity, salinity, cation exchange capacity, microfaunal diversity, or organic matter content. However, the large majority of soil impacts resulting from the Proposed Action are expected to be positive; these would include the return of more stable soils, attenuated nutrient cycling, and a return to normal fire cycles (BLM 2007a). Over the long term, all treatments that remove invasive vegetation and restore native plants should enhance soil quality on public lands (BLM 2007a). For example, sites dominated by spotted knapweed display substantially higher surface runoff and stream sediment yield than sites dominated by native perennial grasses (Lacey et al. 1989).

All weed treatments would further benefit soil quality by reducing the risk of wildfire. Wildfires cause a loss of soil nutrients and the consumption of soil organic matter. Given the ability of severe wildfires to cover large areas, their impacts on soil quality could potentially be quite high.

Vegetation

Eradicating and/or controlling weed infestations benefits native plant communities by decreasing the growth, seed production, and vigor of undesirable species, thereby releasing native species from much of this competition. Herbicides could come into contact with and impact non-target plants through drift, runoff, wind transport, or accidental spills and direct spraying. Potential impacts could include one or more of the following: mortality, loss of photosynthetic foliage, reduced vigor, abnormal growth, or reduced reproductive output. In general, the effects of physical treatment methods would be minimal, both because of the low level of environmental impact of this method and the limited area in which manual use is feasible. Plants could be directly killed or injured by treatment or trampling by applicator personnel.

All weed treatments would likely affect plant species composition of an area and might affect plant species diversity. Elimination or reduction of non-native species would benefit native plant communities by removing competition from weeds. This would provide more resources (e.g., water and nutrients) to native plants, allowing them to reestablish sites previously dominated by weeds. Because certain herbicides target broadleaf species, non-broadleaf species like grasses may begin to dominate the site, changing the species composition. The less a native plant community is disrupted by treatment, the more likely it would be to retain or regain characteristics that could resist weed invasion.

Clopyralid and triclopyr are selective herbicides which target only broadleaf plants while glyphosate is a non-selective herbicide. As such, it is likely to damage or kill most of the plants that are sprayed. By spot spraying with a wand, spray would be deliberately applied only to the invasive plants that are the target. Plants that are immediately adjacent would sometimes receive over-spray and some would be damaged or killed. Native annuals hit by overspray would generally reoccupy much of the same habitat by the following growing season, because their persistent seed banks should be unaffected by the herbicides. Perennials would often recolonize their habitats the next growing season as well, although it would generally take these plants longer to reach full stature and maturity. Also, additional habitat would be opened up for native and non-native species when invasive plant cover is reduced through herbicide application.

Because the yellow starthistle and Italian thistle are not arranged in large continuous patches, no large areas would be sprayed and potentially cleared of vegetation. Instead small holes in the overall vegetation would occur when plants die. The temporary loss of individuals of common species would not affect the vegetation long term.

Special Status Plant Species:

A minimum 15' no-spray buffer will be observed around any Mariposa clarkia population to protect this species from injury/mortality due to spray drift.

Wildlife

Wildlife populations are found in areas and habitats where their basic needs—food, shelter, water, reproduction, and movement—are met. Many animals have special behaviors and physical traits that allow them to successfully compete with other animals in only one or a few habitats; many threatened and endangered species fall into this category. Less specialized species can use a wider range of habitats.

An important activity of the BLM is to manage vegetation to improve wildlife habitat. Plants, which are an important component of habitat, provide food and cover. Food is a source of nutrients and energy, while cover reduces the loss of energy by providing shelter from extremes in wind and temperature, and also affords protection from predators.

Wildlife may be harmed directly through contamination of food, water sources, habitat alteration, or direct contact. In general, field studies suggest that appropriate herbicide use is not likely to have significant direct toxicological effects on wildlife. However, some potential exists to individuals, populations, or species with both proper and improper use of chemical controls.

Possible adverse direct effects to individual animals include death, damage to vital organs, change in body weight, decrease in healthy offspring, and increased susceptibility to predation.

There are three herbicides proposed for use as part of the Proposed Action: clopyralid, glyphosate, and triclopyr.

Effects from clopyralid are as follows (Washington DOT 2006):

Effects on mammals: Clopyralid is practically non-toxic to mammals. The acute LD50 for rats fed clopyralid ranges from 4,300 to 5,000 mg/kg. Formulated Transline has low acute toxicity through skin contact. The LD50 for rabbits exposed by skin contact is >5000 mg/kg. Clopyralid has very low acute toxicity when inhaled. The LC50 value for rats exposed to clopyralid in the air is >3.0 mg/L. Clopyralid does not cause birth defects in the offspring of pregnant laboratory animals exposed to low or moderate doses, doses that are three to four times higher than label application rates. Long-term, low-dose (chronic) exposure to the skin or eyes may be more toxic than short-term, high-dose (acute) exposures. Clopyralid does not bioaccumulate (is not stored) in the tissues of exposed land animals.

Effects on birds: Clopyralid is slightly toxic to birds. The LD50 for mallard ducks and bobwhite quail fed clopyralid is 2000 mg/kg. Chronic clopyralid exposure did not cause significant effects to bobwhite quail embryos.

Effects on fish: Clopyralid is practically non-toxic to fish. The LC50 is 125 mg/L for bluegill sunfish and 104 mg/L for rainbow trout. The chronic exposure (96 hours) LC50 for bluegill and rainbow trout is >100 mg/L.

Effects on aquatic insects: Clopyralid is practically non-toxic to aquatic (water) insects. The LC50 for water fleas (*Daphnia*) exposed to clopyralid for 48 hours is >100 mg/L.

Risks to wildlife involve pesticide behavior in the environment and routes of exposure. Indirect exposure to mammals and birds can occur when they eat contaminated prey or vegetation. Direct exposure can occur when mammals and birds contact clopyralid residues with their skin or eyes or when they inhale clopyralid vapors or particulates. The low application rates and limited use of clopyralid in this project pose a negligible risk to wildlife. Clopyralid does not bioaccumulate in wildlife. Persistence of the compound in the environment could result in low-level, long-term exposures under some scenarios.

Precautions, such as the 10-foot spray buffer for clopyralid, and not spraying when windy will reduce aquatic exposure. However, water contamination may result from application drift, rainfall runoff, or residue leaching through the soil into shallow groundwater. Aquatic animal exposure to clopyralid occurs when they come into direct contact with contaminated surface waters. Clopyralid is practically non-toxic to fish and aquatic insects. The proposed low application rates and limited use of clopyralid pose a low risk to fish and aquatic insects. Clopyralid does not bioaccumulate in aquatic animals; therefore, the risk to fish that eat exposed aquatic insects or other contaminated food sources is low.

Effects from glyphosate are as follows:

Fish and other aquatic organisms: A glyphosate formulation without surfactant like Aquamaster will be used in this project. The material safety data sheet for Aquamaster herbicide states that the material is "practically non-toxic to aquatic organisms on an acute basis (LC50 or EC50 is > 100 mg/L in most sensitive species tested)". Because of the nature of flowing water, chronic exposure will not occur. A Forest Service study found that with less toxic formulations of glyphosate, like those to be used in this project, even under a routine acute exposure scenario, there is low risk to most aquatic organisms, and a moderate risk to sensitive fish species (BLM 2007a). Tadpoles have been found to be very sensitive to the surfactant polyethoxylated tallow amine (POEA) included in popular formulations of glyphosate (e.g., Roundup). However formulations that lack the surfactant, like Aquamaster, have been found to be relatively non-toxic (Relyea 2005).

Surfactants containing nonylphenolpolyethoxylates (NPE) have been shown to be toxic to a number of aquatic organisms, including rainbow trout and some invertebrates, although test treatments showed that adverse impacts were often at higher concentrations of the surfactant than normal application rates (Bakke 2003; Monheit 2004). To provide an extra margin of safety for aquatic organisms, no NPE surfactants will be used in this project.

Terrestrial Wildlife: Forest Service studies have shown that at typical application rates there is low risk or zero risk to wildlife species from using glyphosate. Unlike other formulations of glyphosate like Roundup, formulations approved for aquatic use, (e.g., Aquamaster), do not contain the surfactant POEA. POEA has been shown to be damaging to amphibians.

Forest Service studies showed only two scenarios produced a moderate risk to terrestrial and airborne wildlife from the application of glyphosate (BLM 2007a): (1) at maximum application rates of glyphosate, there is a moderate risk to large and small mammals and to birds from direct spray and acute consumption of contaminated vegetation and insects, and (2) the direct spray of bees and other small animals, again only at the maximum application rate, similarly posed a moderate risk to these animals. However, these moderate risks will not occur because herbicide will not be applied at maximum application rates in this project.

Other factors that reduce the potential for impacts include: (1) Because of the use of spot spraying and patchy distribution of the weeds, the acute consumption of sprayed vegetation or insects by wildlife is highly unlikely. In almost all cases the herbivore and insectivore would consume some sprayed food items and a much greater quantity of unsprayed food items, because only a small proportion of the area will be sprayed. Because of the use of typical rather than maximum application rates, even if there were acute consumption of sprayed food items there would be low risk to these animals. (2) Some bees and other animals may be sprayed directly. As noted above, because of the use of typical rather than maximum application rates, there will be low risk to the individuals of these species that are sprayed at these concentrations. And because of spot spraying, only a small fraction of the local population of these species will be contacted by spray. Only those animals that are in exposed positions in the immediate vicinity of targeted weeds, and that don't disperse when the applicator arrives, are likely to be sprayed.

The use of a vegetable oil based adjuvant, (e.g., Competitor), or a crop oil concentrate adjuvant, (e.g., Agri-Dex), allows the increased efficacy provided by a surfactant but avoids the use of surfactants known to be toxic to aquatic wildlife. POEA surfactants have been shown to be toxic to amphibians, and NPE surfactants have been shown to be toxic to fish (rainbow trout were used in most studies) and some invertebrates, though usually at surfactant concentrations higher than normal application rates. To provide an extra margin of safety for aquatic wildlife, NPE surfactants will not be used in this project.

Effects from triclopyr were assessed in the PEIS in relation to human health. Assuming that exposure risks to human receptors also apply to other terrestrial vertebrates, the following potential risks to wildlife species would be expected from use of triclopyr which showed slight to very slight toxicity to humans and no carcinogenicity. Risks were generally rated as low to none for both receptor groups and all three exposure rates. The HHRA portion of the PEIS (BLM 2007a) found no risks to humans from the inert ingredients associated with the herbicides, including adjuvants. These results indicate generally no or low risk of toxic effects from herbicides.

Because of the relatively low risk of toxicological effects to most wildlife even with direct spraying, it can be said that the main risk to wildlife from herbicide use is habitat modification. In forests, for example, herbicide use may result in minor and temporary effects on plant communities and wildlife habitats following single applications to young stands or stands following harvest, including some beneficial effects, but it usually results in a significant drop in forage the season following treatment. However, forage species and wildlife use of treated areas are likely to recover two to several years after treatment.

The extent of direct and indirect impacts to wildlife would vary by the effectiveness of herbicide treatments in controlling target plants and promoting the growth of native vegetation, as well as by the extent and method of treatment. The impacts of herbicides on wildlife would depend on the sensitivity of each species to the particular herbicides used, the pathway by which the individual animal was exposed to the herbicide, and indirectly on the degree to which a species or individual was positively or negatively affected by changes in habitat. Species that reside in an area year-round and have a small home range (e.g., insects, small mammals, territorial birds), would have a greater chance of being directly adversely impacted if their home range was partially or completely sprayed because they would have greater exposure to herbicides—either via direct contact upon application or indirect contact as a result of touching or ingesting treated vegetation. In addition, species feeding on animals that have been exposed to high levels of herbicides would be more likely to be impacted, particularly if the herbicide bioaccumulates in their tissues.

Factors that reduce the potential for impacts include: (1) Because of the use of spot spraying and the patchy distribution of the yellow starthistle and Italian thistle, the acute consumption of sprayed vegetation or insects by wildlife is highly unlikely. In almost all cases the herbivore or insectivore would consume some sprayed food items and a much greater quantity of unsprayed food items, because only a small proportion of the area would be sprayed. Because of the use of typical rather than maximum application rates, even if there were acute consumption of sprayed food items there would be low risk to these animals. (2) Some bees and other small animals may be sprayed directly. As noted above, because of the use of typical rather than maximum

application rates, there would be low risk to the individuals of these species that are sprayed at these concentrations. And because of spot spraying, only a small fraction of the local population of these species would be contacted by spray. Only those animals that are in exposed positions in the immediate vicinity of yellow starthistle or Italian thistle plants, and that don't disperse when the applicator arrives, are likely to be sprayed.

The ecological effects of both yellow starthistle and Italian thistle invasions have been studied. Both have been shown to displace native vegetation. Unlike the native vegetation it displaces, yellow starthistle has little value for native wildlife. Because of the spines that it produces, yellow starthistle can discourage access by wildlife even into areas that would otherwise provide forage or other resources. The control of yellow starthistle and Italian thistle is likely to produce a net benefit for native wildlife species.

Special Status Wildlife species:

Three special status animal species are either known to occur or potentially occur in the project area. Limestone salamanders and their habitat would be unaffected by spraying because the steep north-facing habitat occupied by limestone salamanders generally does not support either of the target weed species. Foothill yellow-legged frogs spend their entire life cycle in the water or the riparian area. There would be a 10 or 25 foot spray buffer around any open water for non-aquatic herbicides (See Table 1) as well as a provision to cancel spraying if winds exceed 10 mph. Because it provides habitat for a federally listed species, the valley elderberry longhorn beetle, the US Fish and Wildlife Service has established guidelines for buffers for spraying around elderberry shrubs. BLM will observe the 100' buffer specified by the Service. With this generous buffer, and the prohibition of spraying when wind speeds exceed 10 mph, little if any herbicide drift should reach elderberry shrubs, and the beetles (if present) should be unaffected. The seedlings of blue elderberry, the host species for valley elderberry longhorn beetle, might at times compete with one of the target weed species. If this competition were to occur, the proposed action would reduce that competition by suppressing the two weed species. However elderberry is scarce in the project area, and whether this competition ever does take place is unknown. This effect would be negligible, if it occurs at all.

Visual Resources

The appearance of the landscape might be temporarily altered by the death of the target invasive plant species. But because of the spot spraying approach, these dead plants would be surrounded by live vegetation, and in general the dead plants would not be obvious. Because the plants usually would be sprayed at the rosette stage, unsightly persistent large dead skeletons of yellow starthistle or Italian thistle would not develop. The long term effect of weed control would be to restore the natural appearance of the landscape as weeds are reduced over time. This project is consistent with all VRM classes.

4.2 Impacts of the No Action Alternative

Area of Critical Environmental Concern

The No Action Alternative would reduce the ability of the BLM to chemically treat weeds in the buffer zones along waterways which would reduce the BLM's ability to control or eradicate large or particularly difficult infestations along the Merced River—including both reducing existing weed populations and responding to new infestations that may arise.

Reliance on physical control methods in the buffer zone would have an impact on the Merced River ACEC where the presence of weeds is in conflict with the associated values. Manual methods can be used with minimal impacts in sensitive habitats, but they are more costly and labor intensive.

The values of the Limestone Salamander ACEC, which provides for the protection of limestone salamander, would not be affected by the No Action Alternative since the large majority of the ACEC is outside the project boundary. However, the values of the Merced River ACEC would be negatively impacted because without the use of chemical control in the buffer zones, weeds would continue to expand in range and affect wild and scenic values.

Cultural Resources

This alternative would only allow chemical control up to 25 feet from water and would continue to allow the use of manual and mechanical controls. Potential impacts to cultural resources are similar to the proposed action. In the absence of chemical controls in buffer zones, there would be an increase in the use of manual and mechanical control techniques, but the total area treated annually would be much less than with herbicides due to the limitations and inefficiencies of these other methods.

Health and Human Safety

Implementing the No Action Alternative would preclude the use of herbicides to control weeds within 25 feet of water in the Project area and would slightly reduce the associated risks to occupational and public receptors from herbicide use. This would be accompanied by a diminished ability to reduce the current acreage of invasive plants and prevent new or expanded infestations along water. While manual or mechanical control methods are effective for small populations of weeds, they are limited in their effectiveness for treating large populations or more aggressive species. An inability by BLM to effectively control weeds in this area may result in new infestations along roadways or on adjacent private and/or Federal lands.

Hydrology and Water Quality

This alternative would result in less acres treated annually because of the increased labor, time, and cost associated with manual and mechanical control options in buffer zones by water. Continuing the use of the 25 foot buffer zone by water would reduce the possibility of herbicide drift and runoff into water bodies, and herbicide infiltration into alluvial aquifers. The use of herbicide-related mitigation measures in the Proposed Action would minimize the risks

associated with herbicides, reducing the potential benefits of reliance solely on manual and mechanical controls in buffer zones as proposed in this alternative.

Invasive Species

Under the No Action Alternative, fewer acres of weeds in the buffer zone would be treated annually than under the Proposed Action because of the increased labor, time, and cost associated with manual control options; therefore, noxious weeds would spread at a faster rate along the water's edge. Manual treatments would be practicable only for small weed populations or individual plants due to limited resources.

Recreation

Because of its spiny nature, yellow starthistle deters the use of lands for recreation. Weed infestations could deter the use of trails and other areas. Even if the trails are passable, travel through a corridor of yellow starthistle can feel inhospitable and appear unattractive. The no-action alternative is more likely to allow such infestations to occur, persist and increase. Wilderness and special areas that are dominated by invasive species are usually less visually aesthetic and deemed to be impacted by humans and hence not "natural."

Soils

This alternative would result in a reduced area of weed treatment annually because of the limited effectiveness and increased labor, time, and cost associated with manual and mechanical controls. Invasive plants would spread at a faster rate. While some short-term reduction in potential erosion of treated areas would accompany the smaller amount of weed treatments, over the long term soils would suffer due to increased fire hazard and the decreased soil quality and decreased ability of plant roots to hold soil in place in areas dominated by annual grasses and annual or biennial forbs.

Vegetation

With the No Action Alternative, expansion of existing invasive plant populations would occur. The No Action Alternative would result in less acres treated annually because of the increased labor, time, and cost associated with manual and mechanical control options. Invasive plants would spread at a slightly faster rate than under the Proposed Action, adversely affecting native vegetation.

Visual Resources

Because no herbicide treatments would take place in riparian zone buffers under this alternative, visual resources in these buffer zones would not be adversely affected by changes in vegetation related to the presence of dead or dying plants. Conversely, visual quality aspects adversely affected by a dominance of weeds would not improve over time and instead would become further degraded as invasive plants continue to spread. Efforts would be limited to manual and mechanical control methods in the buffer zones which would not result in a large visual impact.

Wildlife

Yellow starthistle and Italian thistle have been shown to limit wildlife access, especially in their mature spiny stages. They are of limited utility to wildlife. By displacing native vegetation and denying access to other resources, these invasive plants can degrade wildlife habitat. The No Action Alternative would allow slightly more habitat to become infested with the target weed species, degrading the habitat for most wildlife.

4.3 Cumulative Impacts

The U.S. Forest Service (USFS) has been controlling yellow starthistle in the Merced River canyon for several years. They applied glyphosate in 2006 and 2007 and have used manual/mechanical methods over a longer period. The USFS did not use herbicides for yellow starthistle control in 2008 because the success of the first two years of spraying reduced the population to a level where herbicide use became unnecessary.

In 2009, Yosemite National Park launched a weed control program of integrated pest management including herbicide use under a new weed management plan completed in 2008. Their planning calls for the use of two herbicides, glyphosate and aminopyralid. The use of glyphosate in the park would be in addition to the BLM and USFS use of this herbicide in the watershed. All three agencies are taking a very conservative approach to the use of herbicides. For instance, the Yosemite plan calls for using herbicides on yellow starthistle only if the occurrence is on steep slopes or difficult to access. BLM's reluctance to use herbicides is indicated by a decade-long control effort for yellow starthistle using only manual/mechanical methods, but populations were slow to diminish in size and the labor and expense of this approach was extensive.

The cumulative impact of controlling yellow starthistle and Italian thistle on federal land under three jurisdictions (National Park Service (NPS), USFS and BLM) and on private lands in this area would be synergistic in terms of weed control. The USFS has an ongoing program of control of yellow starthistle in the Merced River corridor. In the aftermath of the Telegraph Fire they received BAER (Burned Area Emergency Response) funding for inventory and control of weeds, with a focus on those that came into the fire area with fire suppression.

Because there is steady vehicle traffic between BLM lands and other Federal lands, especially recreation traffic associated with white-water boating, it is important that weeds on all three jurisdictions be addressed simultaneously. With a comprehensive program, federal lands in this area could effectively contain and control existing weed populations and prevent invasions in new areas where no control is being attempted, or control is spotty.

5.0 Agencies and Persons Consulted

Mariposa Public Utility District
Upper Merced River Watershed Council

5.1 BLM Interdisciplinary Team

Reviewers:

/s/ James Barnes *2/5/14*

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NEPA Coordinator/Archaeologist

/s/ Jeff Horn *2/5/14*

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Outdoor Recreation Planner/VRM Specialist

/s/ Beth Brenneman *2/4/14*

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Botanist

/s/ Peggy Cranston *2/4/14*

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Wildlife Biologist

5.2 Availability of Document and Comment Procedures

This EA, posted on Mother Lode Field Office's website (www.blm.gov/ca/motherlode) under Information, NEPA (or available upon request), will be available for a 15-day public review period. Comments should be sent to the Mother Lode Field Office, 5152 Hillsdale Circle, El Dorado Hills, CA 95762 or emailed to us at bbrennem@blm.gov.

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APPENDIX A

Standard Operating Procedures for Weed Treatments on BLM Lands in the Mother Lode Field Office

Resource Element	Standard Operating Procedure
General See BLM Handbook H-9011-1 (*Chemical Pest Control*) and manuals 1112 (*Safety*), 9011 (*Chemical Pest Control*), 9012 (*Expenditure of Rangeland Insect Pest Control Funds*), 9015 (*Integrated Weed Management)*, and 9220 (*Integrated Pest Management*)	• Prepare spill contingency plan in advance of treatment. • Conduct a pretreatment survey before applying herbicides. • Select herbicide that is least damaging to environment while providing the desired results. • Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures. • Apply the least amount of herbicide needed to achieve the desired result. • Follow product label for use and storage. • Have licensed applicators apply herbicides. • Use only EPA-approved herbicides and follow product label directions and "advisory" statements. • Review, understand, and conform to the "Environmental Hazards" section on the herbicide label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or the environment. • Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near agricultural or densely populated areas. • Minimize the size of application areas, when feasible. • Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/landowners. • Post treated areas and specify reentry or rest times, if appropriate. • Notify adjacent landowners prior to treatment. • Keep copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs available for review at http://www.cdms.net/. • Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. • Avoid accidental direct spray and spills to minimize risks to resources. • Minimize drift by not applying herbicides when winds exceed 10 mph (6 mph for aerial applications) or a serious rainfall event is imminent. • Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas. • Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. • Use drift reduction agents and low volatility formulations, as appropriate, to reduce the drift hazard to non-target species. • Turn off applied treatments at the completion of spray runs and during turns to start another spray run. • Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Clean OHVs to remove seeds.

Resource Element	Standard Operating Procedure
Air Quality See Manual 7000 (Soil, Water, and Air Management)	• Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. • Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph (6 mph for aerial applications) or rainfall is imminent. • Use drift reduction agents, as appropriate, to reduce the drift hazard. • Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). • Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).
Soil See Manual 7000 (Soil, Water, and Air Management)	• Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected. • Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility. • Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.
Water Resources See Manual 7000 (Soil, Water, and Air Management)	• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. • Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. • Use local historical weather data to choose the month of treatment. Considering the phenology of the target species, schedule treatments based on the condition of the water body and existing water quality conditions. • Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity. • Review hydrogeologic maps of proposed treatment areas .Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction. Minimize treating areas with high risk for groundwater contamination. • Conduct mixing and loading operations in an area where an accidental spill would not contaminate a water body. • Do not rinse spray tanks in or near water bodies. Do not broadcast pellets where there is danger of contaminating water supplies. • Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies. • Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.
Wetlands and Riparian Areas	• Use a selective herbicide and a wick or backpack sprayer. • Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand-spray applications.

Pollinators	• Complete vegetation treatments seasonally before pollinator foraging plants bloom. • Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily. • Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment. • Minimize herbicide application rates. Use typical rather than maximum rates where there are important pollinator resources. • Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources. • Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula. • Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants (if invasive species) and in their habitats.
Fish and Other Aquatic Organisms See Manuals 6500 (Wildlife and Fisheries Management) and 6780 (Habitat Management Plans)	• Use appropriate buffer zones based on label and risk assessment guidance. • Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments. • Use appropriate application equipment/method near water bodies if the potential for offsite drift exists. • For treatment of aquatic vegetation, 1) treat only that portion of the aquatic system necessary to achieve acceptable vegetation management, 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms, and 3) follow water use restrictions presented on the herbicide label.
Wildlife See Manuals 6500 (Wildlife and Fisheries Management) and 6780 (Habitat Management Plans)	• Use herbicides of low toxicity to wildlife, where feasible. • Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area. • Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife. • Avoid using glyphosate formulations that include the adjuvant R-11 in aquatic ecosystems and either avoid using formulations with the surfactant POEA or seek to use the formulation with the lowest amount of POEA available to reduce risks to amphibians and aquatic organisms.

Resource Element	Standard Operating Procedure
Threatened, Endangered, and Sensitive Species See Manual 6840 (Special Status Species)	• Survey for special status species before treating an area. Consider effects to special status species when designing herbicide treatment programs. • Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants. • Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated.
Visual Resources See Handbooks H-8410-1 (Visual Resource Inventory) and H-8431-1 (Visual Resource Contrast Rating) and Manual 8400 (Visual Resource Management)	• Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation. • Consider the surrounding land use before assigning aerial spraying as an application method. • Minimize offsite drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area. • If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and not easily seen (Class I) or, if seen, does not attract the attention of the casual viewer (Class II). • Lessen visual impacts by 1) designing projects to blend in with topographic forms, 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects, and 3) revegetating the site following treatment. • When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established Visual Resource Management (VRM) objectives.
Wilderness and Other Special Areas See Handbooks H-8550-1 (Management of WSAs) and H-8560-1 (Management of Designated WSAs) and Manual 8351 (WSRs)	• Revegetate disturbed sites with native species if there is no reasonable expectation of natural regeneration. • Provide educational materials at trailheads and other wilderness entry points to educate the public on the need to prevent the spread of weeds.
Wilderness and Other Special Areas (cont.)	• Use the "minimum tool" to treat invasive vegetation, relying primarily on use of ground-based tools, including backpack pumps, hand sprayers, and pumps mounted on pack and saddle stock. • Use chemicals when they are the minimum method to control weeds that are spreading within the wilderness or threaten lands outside the wilderness. • Give preference to herbicides that have the least impact on non-target species and the wilderness environment. • Implement herbicide treatments during periods of low human use, where feasible. • Address wilderness and special areas in management plans. Within 0.25 mile on either side of the river of all eligible or suitable WSRs, proposed treatments must preserve the identified Outstanding Remarkable Values and preliminary classifications.

Recreation See Handbook H-1601-1 (Land Use Planning Handbook, Appendix C)	• Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. • Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas. • Adhere to entry restrictions identified on the herbicide label for public and worker access. • Post signs noting exclusion areas and the duration of exclusion, if necessary. • Use herbicides during periods of low human use, where feasible.
Social and Economic Values	• Post treated areas and specify reentry or rest times, if appropriate. • Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Control public access until potential treatment hazards no longer exist. • Observe restricted entry intervals specified by the herbicide label. • Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources, especially vegetation over areas larger than the treatment area. • Consult with Native American tribes and Alaska Native groups to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies, including chemicals, for herbicide treatment projects through local suppliers. • To minimize fears based on lack of information, provide public education on the need for vegetation treatments and the use of herbicides in an Integrated Pest Management program for projects proposing local use of herbicides.
Rights-of-Way	• Coordinate vegetation management activities where joint or multiple use of a ROW exists. • Notify other public land users within or adjacent to the ROW proposed for treatment. • Use only herbicides that are approved for use in ROW areas.

Resource Element	Standard Operating Procedure
Human Health and Safety	• Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of 0.25 mile for aerial applications and 100 feet for ground applications, unless a written waiver is granted. • Use protective equipment as directed by the herbicide label. • Post treated areas with appropriate signs at common public access areas. • Observe restricted entry intervals specified by the herbicide label. • Have a copy of MSDSs at work site. • Contain and clean up spills and request help as needed. • Secure containers during transport. • Follow label directions for use and storage. • Dispose of unwanted herbicides promptly and correctly.
Cultural Resources and Native American Religious Concerns See Handbooks H-8120-1 (Guidelines for Conducting Tribal Consultation) and Manuals 8100 (The Foundations for Managing Cultural Resources), 8120 (Tribal Consultation Under Cultural Resource Authorities).	• Follow standard procedures for compliance with Section 106 of the NHPA, as implemented through the Colorado State protocol. • Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • Work with tribes to minimize impacts to these resources. • Follow guidance under Human Health and Safety in areas that may be visited by Native peoples after treatments. • Native American Traditional Cultural Properties (TCPs) are to be considered in the planning and completion of Federal actions in accordance with Section 106 of the NHPA, as amended (Guidelines of Bulletin 38 of the National Register). Physically affecting the integrity of traditional cultural properties, including plant collecting places, should be avoided when possible. To protect and preserve Native American religious practices, the Executive Order of May 24, 1996 requires the implementation of "procedures to ensure reasonable notice of Proposed Actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites." This notice further states, "where appropriate, agencies shall maintain the confidentiality of sacred sites." The GSFO will protect TCPs in consultation with the appropriate tribal representatives. • Any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item, or archaeological resources on public lands is subject to arrest and penalty of law (16 USC 433, 16 USC 470, 18 USC 641, 18 USC 1170, and 18 USC 1361). See also: Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act.

APPENDIX B

Mitigation Measures for Weed Treatments on BLM Lands in the Mother Lode Field Office

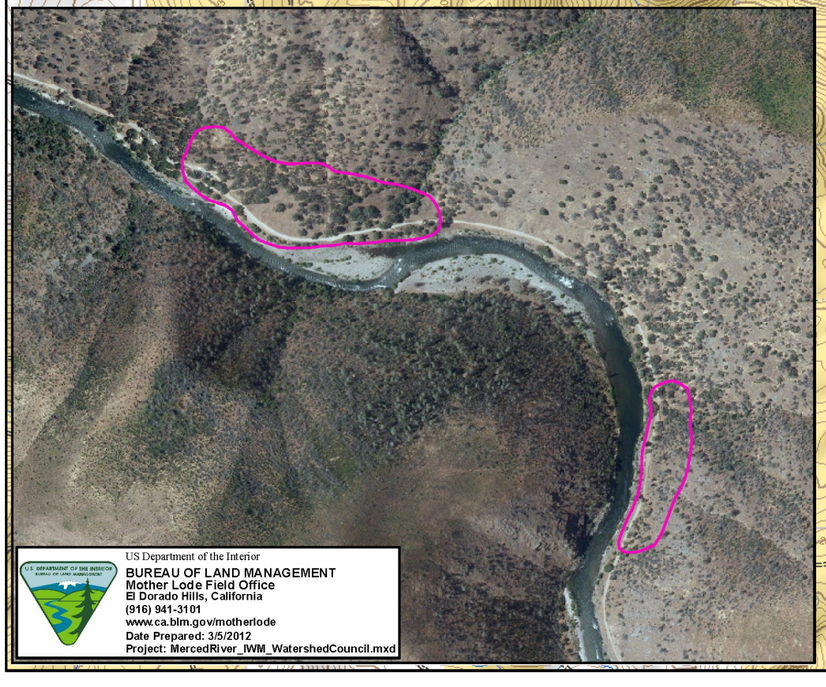
Vegetation Treatments EIS Mitigation Measures

Resource	Mitigation Measures
Soil Resources	None proposed.
Water Resources and Quality	Establish appropriate (herbicide-specific) buffer zones to downstream water bodies, habitats, and species/populations of interest (Appendix C).
Wetland and Riparian Areas	• See mitigation for Water Resources and Quality and Vegetation.
Vegetation	• Establish appropriate (herbicide specific) buffer zones around downstream water bodies, habitats, and species/populations of interest. Consult the ERAs for more specific information on appropriate buffer distances under different soil, moisture, vegetation, and application scenarios. • To protect special status plant species, implement all conservation measures for plants presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment*.
Fish and Other Aquatic Organisms	• Limit the use of terrestrial herbicides in watersheds with characteristics suitable for potential surface runoff, and have fish-bearing streams, during periods when fish are in life stages most sensitive to the herbicide(s) used. • Implement all conservation measures for aquatic animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment*. • Establish appropriate herbicide-specific buffer zones for water bodies, habitats, or fish or other aquatic species of interest (see Appendix C and recommendations in individual ERAs).
Wildlife	• Where practical, limit glyphosate and hexazinone to spot applications in rangeland and wildlife habitat areas to avoid contamination of wildlife food items. • To protect special status species, implement all conservation measures for terrestrial animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment*. Apply these measures to special status species (refer to conservation measures for a similar size and type of species and same trophic guild).
Cultural Resources and Native American Religious Concerns	• A cultural resource inventory shall be conducted and Historic properties will be identified and protected prior to any direct or indirect impact by weed treatments on a project-by-project basis. Consultation with the SHPO, tribes, and other consulting parties will be conducted in accordance to the legal requirements of Section 106 of the NHPA as implemented through the Colorado State protocol.
Visual Resources	• None proposed.
Wilderness and Other Special Areas	Mitigation measures that may apply to wilderness and other special area resources are associated with human and ecological health and recreation. Refer to the Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, Recreation, and Human Health and Safety sections.
Recreation	• Mitigation measures that may apply to recreational resources are associated with human and ecological health. Refer to the Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, and Human Health and Safety sections..

R17E R18E

T3S T3S

Italian Thistle Herbicide Treatment for the Upper Merced River Watershed Council



US Department of the Interior
BUREAU OF LAND MANAGEMENT
Mother Lode Field Office
El Dorado Hills, California
(916) 941-3101
www.ca.blm.gov/motherlode
Date Prepared: 3/5/2012
Project: MercedRiver_IWM_WatershedCouncil.mxd

Briceburg

Bear Creek

Merced River

140

Rancheria Creek

N W E S

0 0.125 0.25 0.5 0.75 1 Miles

IWM_Treatment Location

ca_elev_contour 40ft

Index_

40 foot

200 foot

Land Status

AGENCY

Bureau of Land Management

US Forest Service

National Park Service

Bureau of Reclamation

US Fish and Wildlife Service

Military

Other Federal

State

County/State/Regional

Private/Other

T4S T4S

R17E R18E